

Claims: I claim:

- 1) In a bicycle rear wheel suspension comprising:
  - a) a main frame,
  - b) a shock absorbing means,
  - c) a swingarm that moves relative to the main frame,
  - d) a bicycle rear wheel attached to said swingarm,
  - e) a crank assembly attached to said swingarm,
  - f) and a linkage means for connecting said swingarm to said frame,
  - g) said swingarm has an instant center of rotation that moves as the swingarm moves from the uncompressed to fully compressed state, the instant center of rotation is horizontally located forward of the crank assembly center when the swingarm is uncompressed and moves significantly rearward as the suspension is compressed.
  - h) thus reducing in the vertical movement of said crank assembly as the swingarm is moved from the uncompressed to compressed position.
- 2) The bicycle rear wheel suspension of claim 1 wherein the said linkage means comprises a plurality of links that pivotally connect between said swingarm and said frame.
- 3) The bicycle rear wheel suspension of claim 2 wherein said plurality of links comprise an upper pair and a lower pair of links.
- 4) The bicycle rear wheel suspension of claim 2 wherein the instant center of rotation is horizontally located forward of the crank assembly center when the swingarm is uncompressed and moves significantly rearward and upward or rearward and downward as the suspension is compressed.
- 5) The bicycle rear wheel suspension of claim 1 wherein when the swingarm is uncompressed, the instant center of rotation is horizontally located between 25 to 150 millimeters (1 to 6 inches) forward from the crank assembly center.
- 6) The bicycle rear wheel suspension of claim 1 wherein when the swingarm is compressed, the instant center of rotation is horizontally located between 25 millimeters (1 inch) in front of the crank assembly center and 50 millimeters (2 inches) rearward of the crank assembly center.
- 7) In a bicycle rear wheel suspension comprising:

- a) a main frame,
  - b) a shock absorbing means,
  - c) a swingarm that moves relative to the main frame,
  - d) a bicycle rear wheel attached to said swingarm,
  - e) a crank assembly attached to said swingarm,
  - f) and a linkage means for connecting said swingarm to said frame,
  - g) said linkage means comprise a first and second link with each link pivotably attached from the swingarm to the main frame,
  - h) when the swingarm is in the uncompressed position, said first and second link are positioned so that the link centerlines intersect at a location that is a horizontally located forward of the crank assembly center
  - i) when the swingarm is compressed, said first and second link are repositioned so that the link centerlines now intersect at a location that is horizontally forward or rearward of the crank assembly center,
  - j) thus reducing in the vertical movement of said crank assembly as the suspension is moved from the uncompressed to compressed position.
- 8) The bicycle rear wheel suspension of claim 5 wherein there are additional links that operate in parallel to either said first link or said second link.
- 9) The bicycle rear wheel suspension of claim 5 wherein when the swingarm is in the uncompressed position, said first and second link are positioned so that the link centerlines intersect at a location that is horizontally located between 25 to 150 millimeters (1 to 6 inches) forward of the crank assembly center.
- 10) The bicycle rear wheel suspension of claim 5 wherein when the swingarm is compressed, said first and second link are repositioned so that the link centerlines now intersect at a location that is horizontally located between 25 millimeters (1 inch) in front of the crank assembly center and 50 millimeters (2 inches) rearward of the crank assembly center.